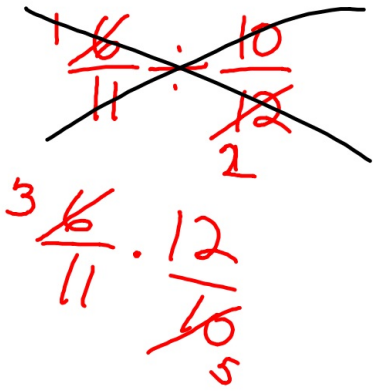

Page 1

Bellwork: 3/19/13

Perform the indicated operation: (no calculator)

1) $\frac{3}{4} + \frac{7}{9}$

$\frac{27}{36} + \frac{28}{36} = \boxed{\frac{55}{36}}$

2) $\frac{-2}{5} - \frac{5}{2}$

$-\frac{4}{10} - \frac{25}{10} = \boxed{\frac{-29}{10}}$

3) $\frac{-4}{7} \bullet \frac{8}{3}$ $\boxed{\frac{-32}{21}}$

4) $\frac{9}{8} \div \frac{6}{11}$

$\frac{3}{8} \cdot \frac{11}{6} = \frac{33}{16}$ $\frac{99}{48}$

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ALGEBRA 2
NOTES 8.4

Name _____
Date _____ Pd. _____

RATIONAL EXPRESSIONS

Rational Expression: a fraction with variables in the denominator.

Simplifying Rational Expressions:

Recall: A fraction is in reduced form if the numerator and denominator have no common factors. The key to simplifying rational expressions is your ability to factor polynomials.

Reduce the following expressions:

12
6 | 2

Example 1: $\frac{x^2+4x-12}{3x-6} = \frac{(x+6)(x-2)}{3(x-2)} = \frac{x+6}{3}$

$(x+6)(x-2)$

Example 2: $\frac{16-x^2}{2x^2-9x+4} = \frac{-x^2+16}{2x^2-9x+4} = \frac{-(x^2-16)}{2x^2-9x+4} = \frac{-(x+4)(x-4)}{(2x-1)(x-4)}$

$2x^2-8x-1x+4$
$2x(x-4)-1(x-4)$

$\frac{-(x+4)}{2x-1}$

Remember to avoid this common error:

$$\frac{x+3}{3} \neq \frac{x+\cancel{3}}{\cancel{3}} \neq x$$

You can only divide common *factors*, not terms.

Page 3

$$\frac{x^2+6x+9}{9x+27} = \frac{(x+3)(x+3)}{9(x+3)} = \frac{(x+3)}{9}$$

$$\frac{25-x^2}{2x^2+11x+5} = \frac{-x^2+25}{2x^2+11x+5} = \frac{-(x^2-25)}{2x^2+11x+5} = \frac{-(x+5)(x-5)}{(2x+1)(x+5)}$$

$2x^2+10x+1x+5$
$2x(x+5)+1(x+5)$

$\frac{-(x-5)}{2x+1}$

Page 4

$$\frac{5m}{15m^2-5m} = \frac{5m}{5m(3m-1)} = \boxed{\frac{1}{3m-1}}$$

Homework: Worksheet 8.4 #1 (page 2 of packet)

II. ***Multiplying Rational Expressions:***

Both rational numbers and rational expressions are multiplied in the same way:

$$\frac{a}{b}\cdot\frac{c}{d}=\frac{ac}{bd} \quad \text{where } b \text{ and } d \neq 0$$

Always express answers in simplest form.

Example 1: $\frac{4a}{5c}\cdot\frac{15c}{16a}=$

Example 2: $\frac{x^3}{x+3}\cdot\frac{(x+2)(x+3)}{2x}=$

Sometimes you will need to factor *before* you multiply in order to find the common factors so you can reduce the expression.

Example 3: $\frac{x^2-9}{x^2+x-12}\cdot\frac{x+2}{x+3}=$

Example 4: $\frac{x^3+5x^2}{(x+5)^2}\cdot\frac{x^2-25}{x^2}=$

Homework: page 4 of packet